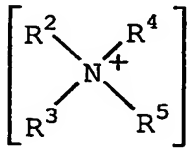
CLAIMS

1 A cleaning agent composition comprising a nonionic surfactant represented by the following formula (I):

$$R^1O(EO)_x(PO)_yH \qquad (I)$$

(wherein R^1 represents a linear or branched alkyl group having from 6 to 20 carbon atoms or a linear or branched alkenyl group having from 6 to 20 carbon atoms, EO represents an oxyethylene group, PO represents an oxypropylene group, EO and PO each is bonded by random addition or block addition, x number of EOs and y number of POs are arranged in an arbitrary order, x and y each independently represents an integer of 1 to 20, and x/(x+y) is 0.5 or more) and a quaternary ammonium hydroxide.

2 The cleaning agent composition as claimed in Claim 1, wherein the quaternary ammonium hydroxide is a compound represented by the following formula (II):



(II)

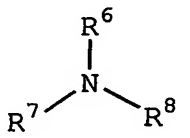
(wherein R^2, R^3, R^4 and R^5 each independently represents an alkyl group having from 1 to 6 carbon atoms or a hydroxyalkyl group having from 1 to 6 carbon atoms).

3 The cleaning agent composition as claimed in Claim 2,

wherein the quaternary ammonium hydroxide is tetramethylammonium hydroxide.

4 The cleaning agent composition as claimed in any one of Claims 1, which further comprises an alkanolamine.

5 The cleaning agent composition as claimed in Claim 4, wherein the alkanolamine is a compound represented by the following formula (III):



(III)

(wherein R^6 represents a hydroxyalkyl group having from 1 to 4 carbon atoms; and R^7 and R^8 each independently represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a hydroxyalkyl group having from 1 to 4 carbon atoms or an aminoalkyl group having from 1 to 4 carbon atoms, or R^7 and R^8 combine to form an alkylene group having from 3 to 6 carbon atoms, and the alkylene group may have an oxygen or nitrogen atom inserted between carbon atoms constituting the main chain).

6 The cleaning agent composition as claimed in Claim 5, wherein the alkanolamine is any one compound selected from the group consisting of monoethanolamine, diethanolamine and triethanolamine.

7 The cleaning agent composition as Claimed in Claim 4, wherein the alkanolamine is contained in an amount of

0.001 to 50 mass% based on the entire amount of the cleaning agent composition.

8 The cleaning agent composition as Claimed in Claim 1, wherein the nonionic surfactant is contained in an amount of 0.0001 to 10 mass% based on the entire amount of the cleaning agent composition.

9 The cleaning agent composition as Claimed in Claim 8, wherein the quaternary ammonium hydroxide is contained in an amount of 0.001 to 30 mass% based on the entire amount of the cleaning agent composition.

10 A method for cleaning a semiconductor wafer, comprising the steps of:

(i) cleaning the wafer using the cleaning agent composition as claimed in any one of Claims 1 to 9; and

(ii) cleaning the wafer using a composition containing ammonia and hydrogen peroxide.

11 The method for cleaning a semiconductor wafer as claimed in Claim 10, wherein the degreasing and removal of particles on the semiconductor wafer surface are performed in the step (i).

12 The method for cleaning a semiconductor wafer as Claimed in Claim 11, wherein the removal of particles on the semiconductor wafer surface are performed in the step (ii).

13 A method for producing a semiconductor wafer, comprising the steps of:

lapping the wafer surface;

specularly polishing the wafer surface;

cleaning the wafer using the cleaning agent composition as claimed in any one of Claims 1 to 9; and

cleaning the wafer using a composition containing ammonia and hydrogen peroxide.

14 A semiconductor wafer produced by the production method as claimed in Claim 13.

15 The semiconductor wafer as claimed in 14 wherein the number of particles attached to the wafer surface and having a particle size of 0.2 μm or more is 130 or less per 100 cm^2 of the wafer surface.

16 The semiconductor wafer as claimed in Claim 14, wherein the semiconductor wafer is a silicon wafer, a gallium-arsenic wafer, a gallium-phosphorus wafer or an indium-phosphorus wafer.

17 The semiconductor wafer as claimed in Claim 16, wherein the semiconductor wafer is a silicon wafer and the surface roughness (Ra) is 0.2 nm or less.

18 The semiconductor wafer as claimed in Claim 16, wherein the semiconductor wafer is gallium-arsenic wafer and the surface roughness (Ra) is 0.4 nm or less.